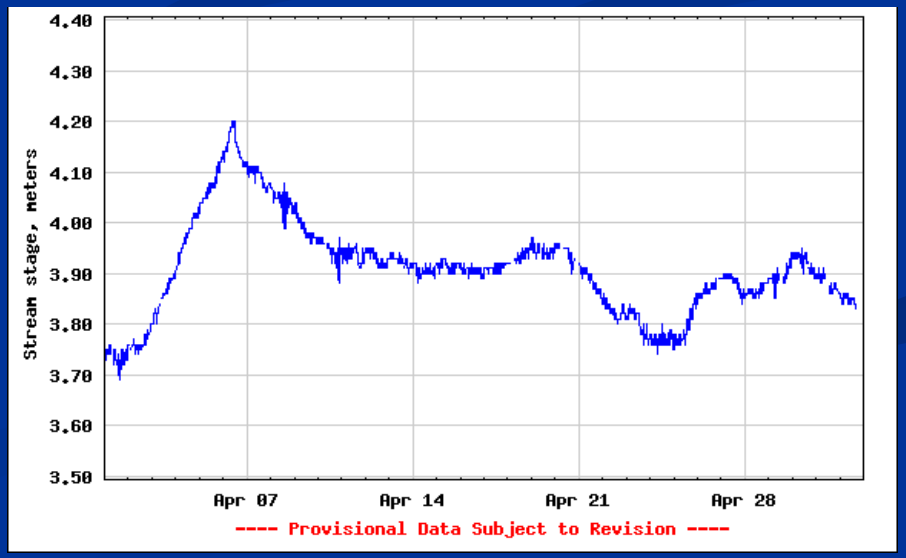
شبكة محطات الرصد الهيدرولوجي

Hydrological Monitoring Stations Network

By (DGWRM) Presented to 5th World Water Forum



Hydrological Monitoring Station Network in Iraq
"Abstract"

By Dr. Alaa H. AL-Shami

The control and intelligent use of water play a predominant role in operating, scheduling and managing water supply system particularly in arid and semi arid regions where the amount and timing of precipitation are not adequate to meet the water requirement for agriculture, electric power generation and human consumptions.

River monitoring station and hydrological observation in Iraq h come to a complete stop in most regions in many cases since m than 10 years. Where gauge readings have continued, the state measuring equipment is in adequate if it is not disappeared looting and the station need urgent rehabilitation.

Hydrological monitoring is of particular importance in Iraq a provides planning data and the information required for operatic water resources management.

The application include water allocation water control operat the optimization of reservoir operation irrigation and drou contingency planning as well as water availability fore casting.

Iraq has a very complex system of dams barrages, regulators, pu station canal and irrigation system that require specific flow operate and manage properly.

It is estimated that nearly 105 hydrological stations are required proper water control system and reservoir operation.

An cooperation between the Italian Ministry for the Environn and Territory and Hydrological Engineering Center (HEC) U.S with Ministry of water resource to supply most of the station a grant for measuring water level, water quality and discharges, the most site.

The project is under progress and shortly will be completed.

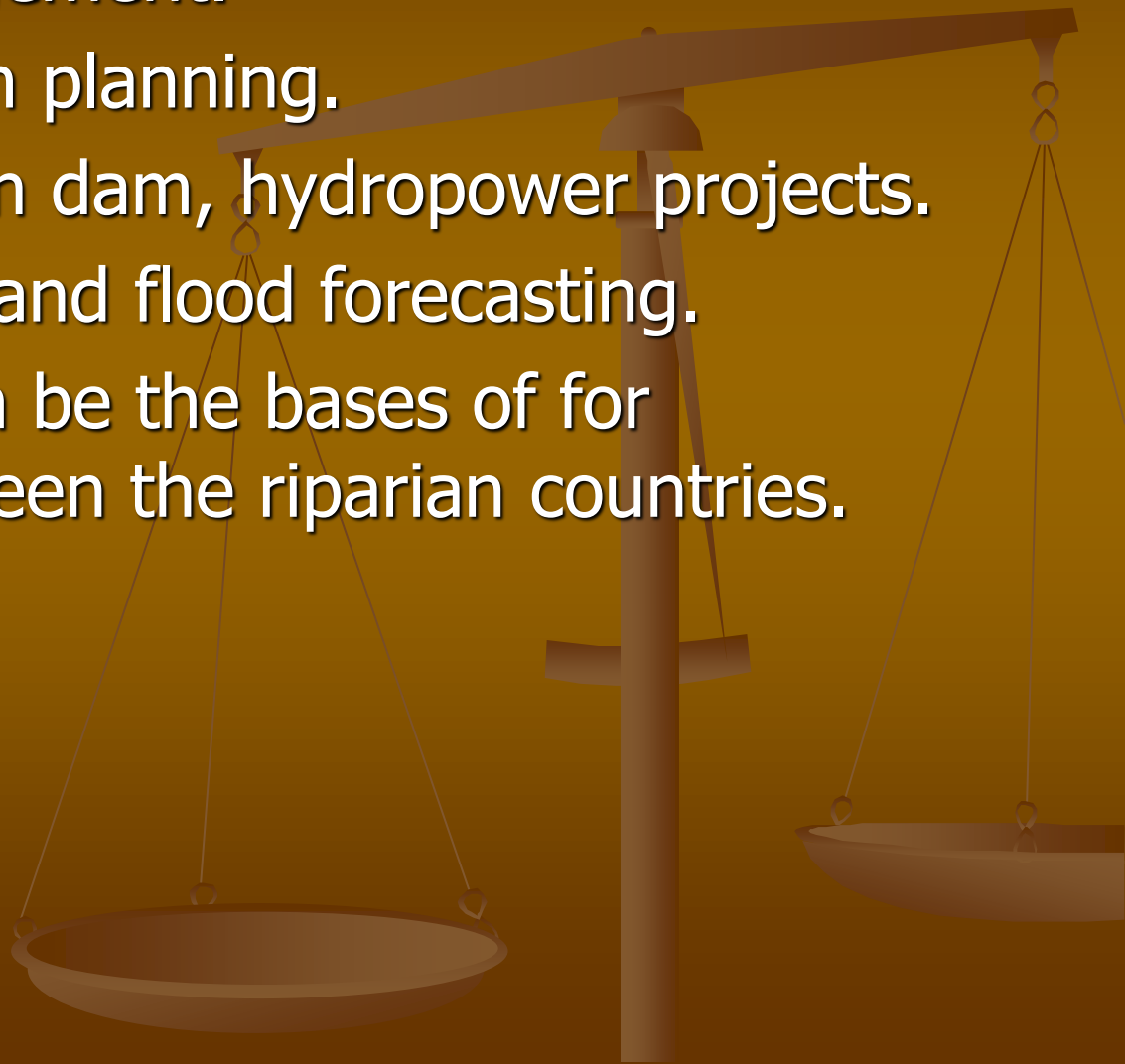
Objective of Data Collection

The objective of the proposed hydrological observation network is to provide accurate

data for:-

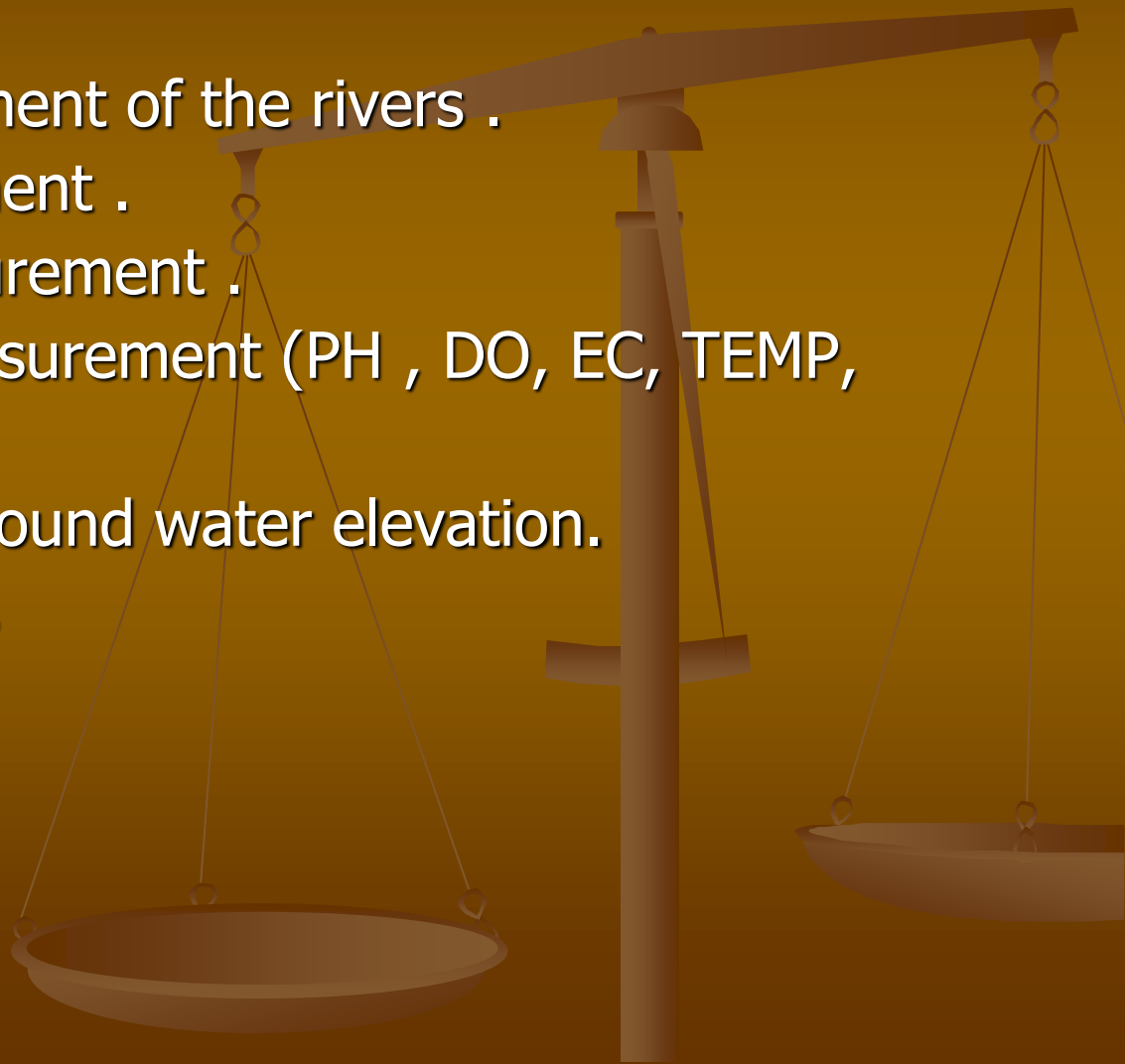
- Water resources assessment (in one of the most important head water areas in the Middle East).
- Monitoring of inflow from Turkey , Iran , and Syria and can be shared between the riparian countries.
- Monitoring trends caused by climate and land use changes.
- Water resources management , sustainable and equitable water use.

- Watershed management.
- Drought mitigation planning.
- Design of irrigation dam, hydropower projects.
- Water availability and flood forecasting.
- Historical data can be the bases of for negotiations between the riparian countries.

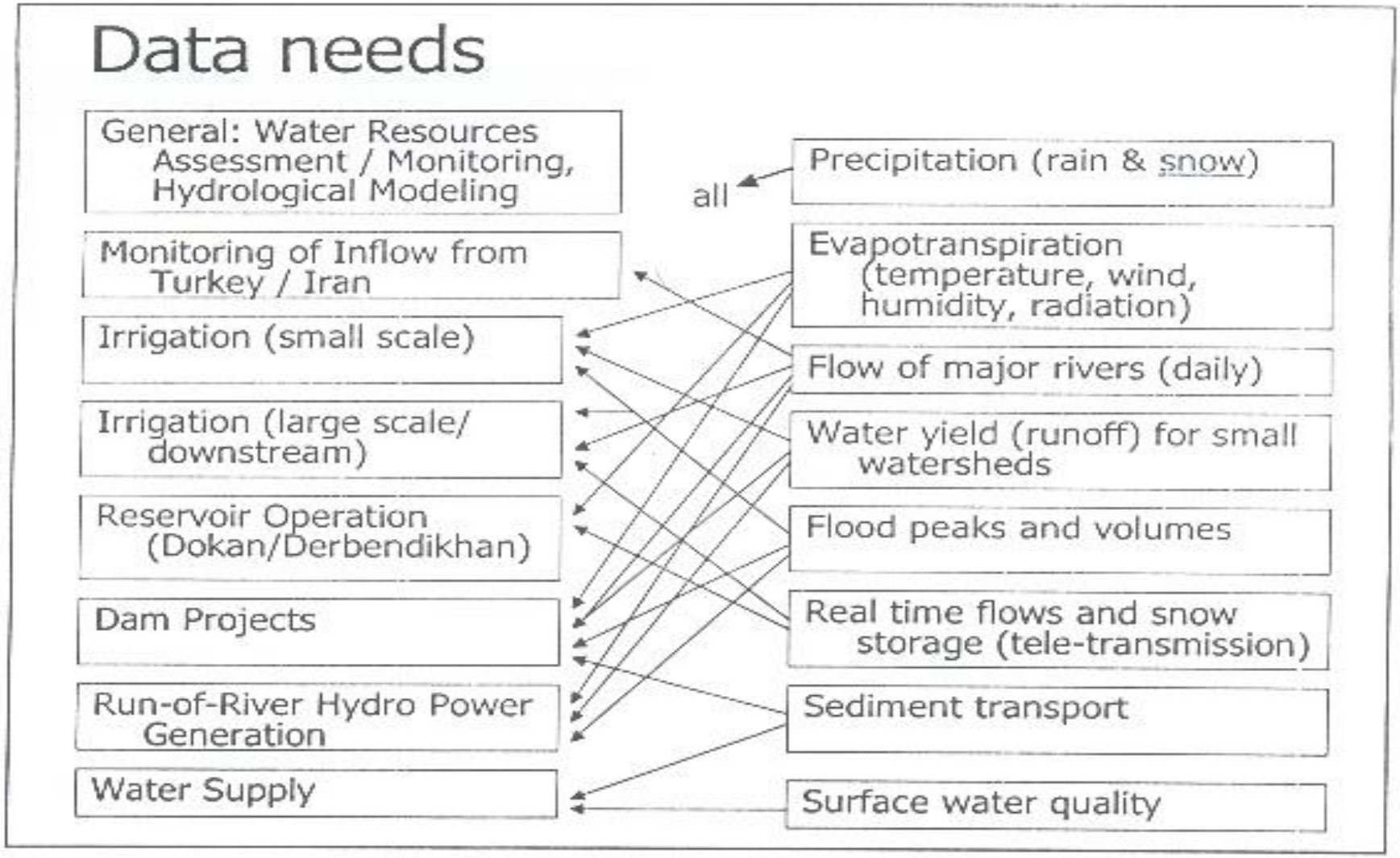


The system measuring the following parameters :

1. Water level.
2. Discharge measurement of the rivers .
3. Sediment measurement .
4. Water quality measurement .
5. Chemical water measurement (PH , DO, EC, TEMP, etc…).
6. Measurement the ground water elevation.
7. Snow measurement .



Data users and data needs



Renovation of Gauging Stations
"Partner Agencies"

- ✓ Iraq Ministry of Water Resources (MoWR)

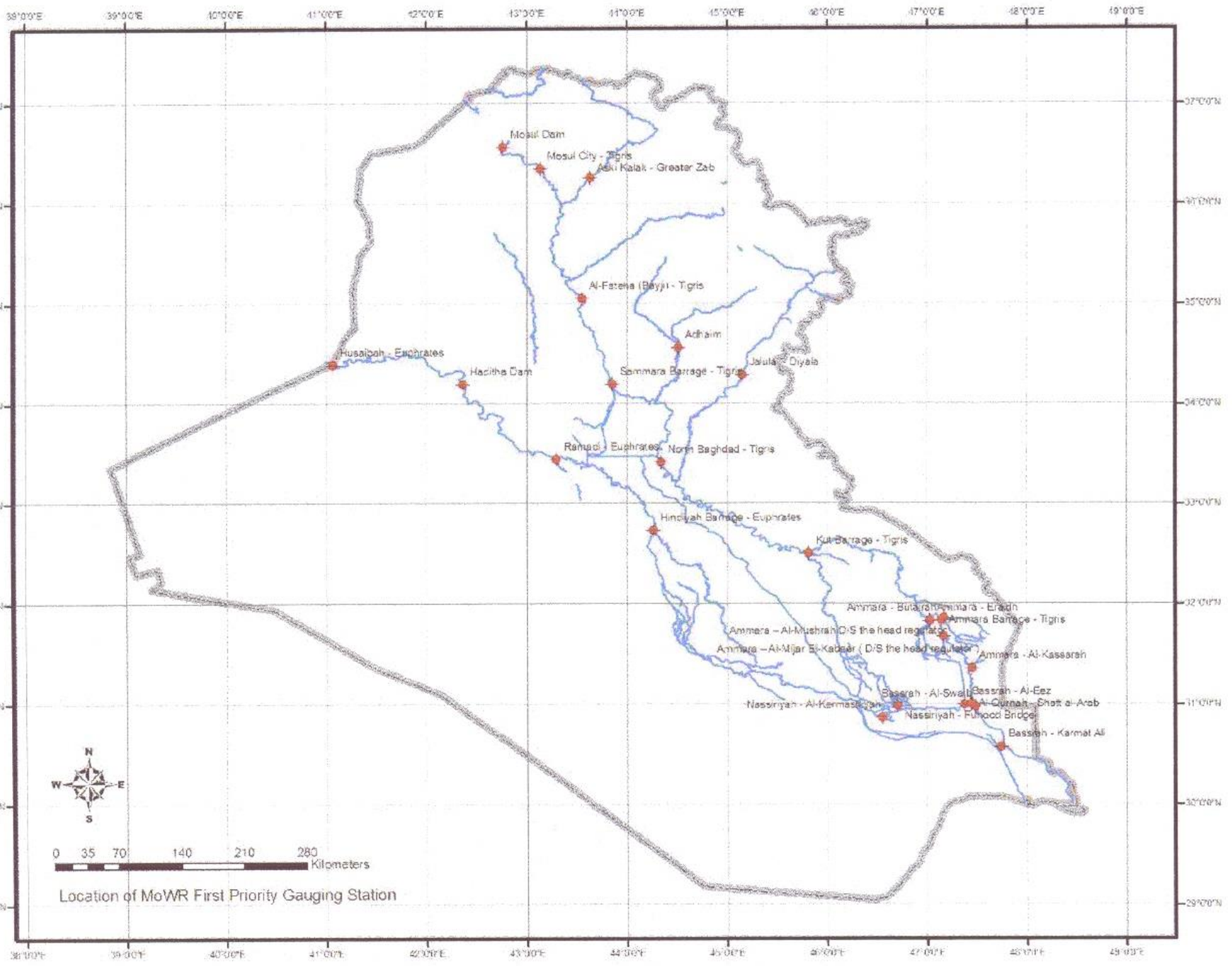
- ➢ G.D. for Water Resources Management
- ➢ CRIM (Center for Rehabilitation of Iraqi Marshlands)
- ➢ G.D. for Dams and Reservoirs operation
- ➢ G.D. for operation and Maintenance of Irrigation projects
- ➢ USACE – HEC (Hydrological Engineering Center)

- ✓ USGS (Untied State of Geological Survey)
- ✓ IMET (Italian Ministry for Environment and Territory)
- ✓ ARDI (Agriculture-food Research and Development initiative)
- ✓ USAID (Unite States Agency for International Development)

محطات الرصد القديمة

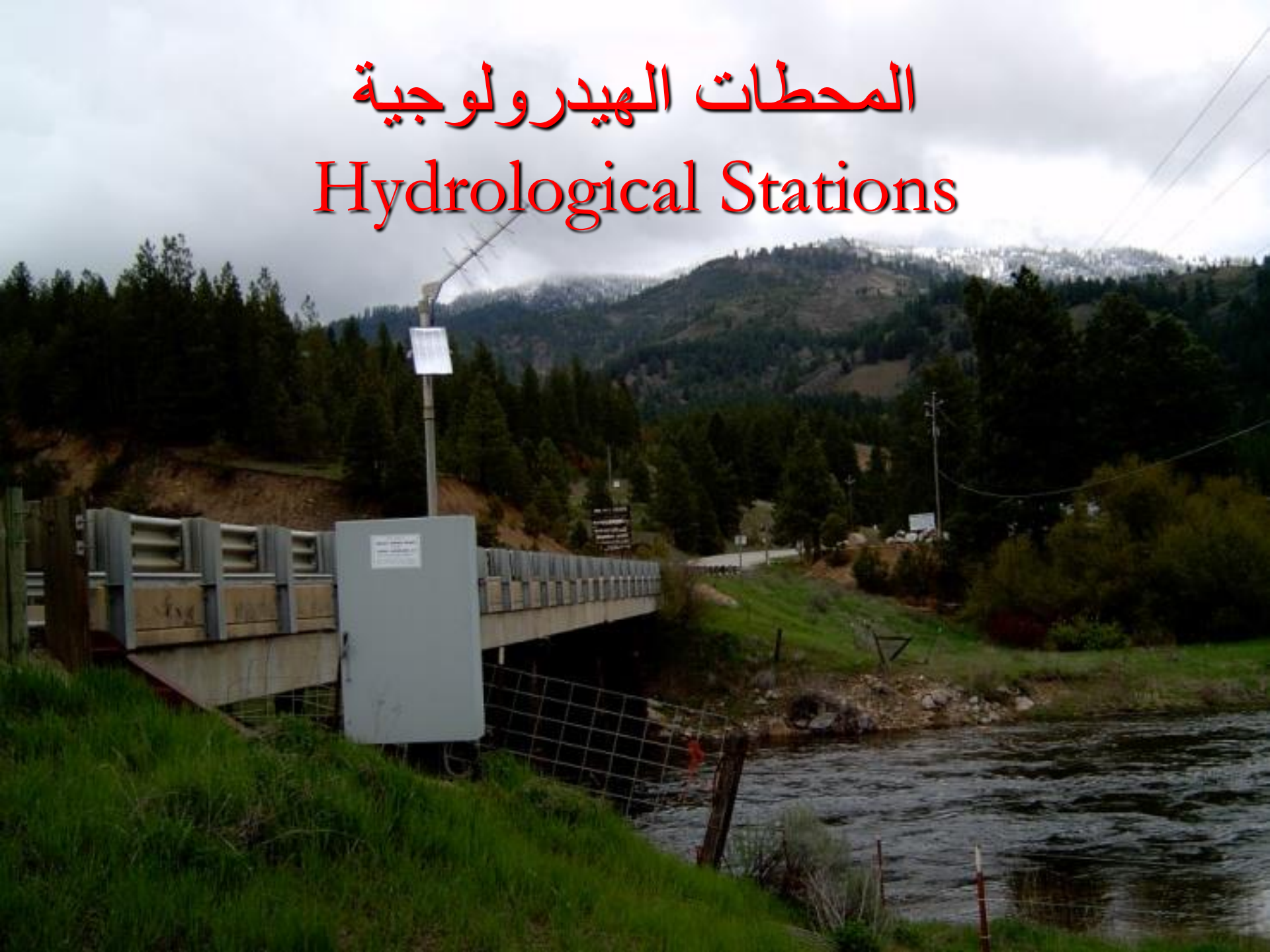
Sarai Baghdad station

Fig (1.2) : Staff gage Site (Sarai Baghdad station) – (July 2004)


Mosul Dam
Mosul City - Tigris
Aski Kalak - Greater Zab
Al-Fatcha (Bayji) - Tigris
Adhaim
Husaibah - Euphrates
Haditha Dam
Samarra Barrage - Tigris
Jalula - Diyala
Ramadi - Euphrates
North Baghdad - Tigris
Hindiyah Barrage - Euphrates
Kut Barrage - Tigris
Ammara - Butaira
Ammara - Eraidh
Ammara Barrage - Tigris
Ammara – Al-Mushrah (D/S the head regulator)
Ammara – Al-Mijar El-Kabeer (D/S the head regulator)
Ammara - Al-Kassarah
Basrah - Al-Swaib
Basrah - Al-Eez
Nassiriyah - Al-Karmashan
Al-Qurnah - Shatt al-Arab
Nassiriyah - Fuhood Bridge
Basrah - Karmat Ali
N
W
E
S
0 35 70 140 210 280
Kilometers
Location of MoWR First Priority Gauging Station

المحطات الهيدرولوجية

Hydrological Stations



مخطط توضيحي لمحطة القياس
Typical station

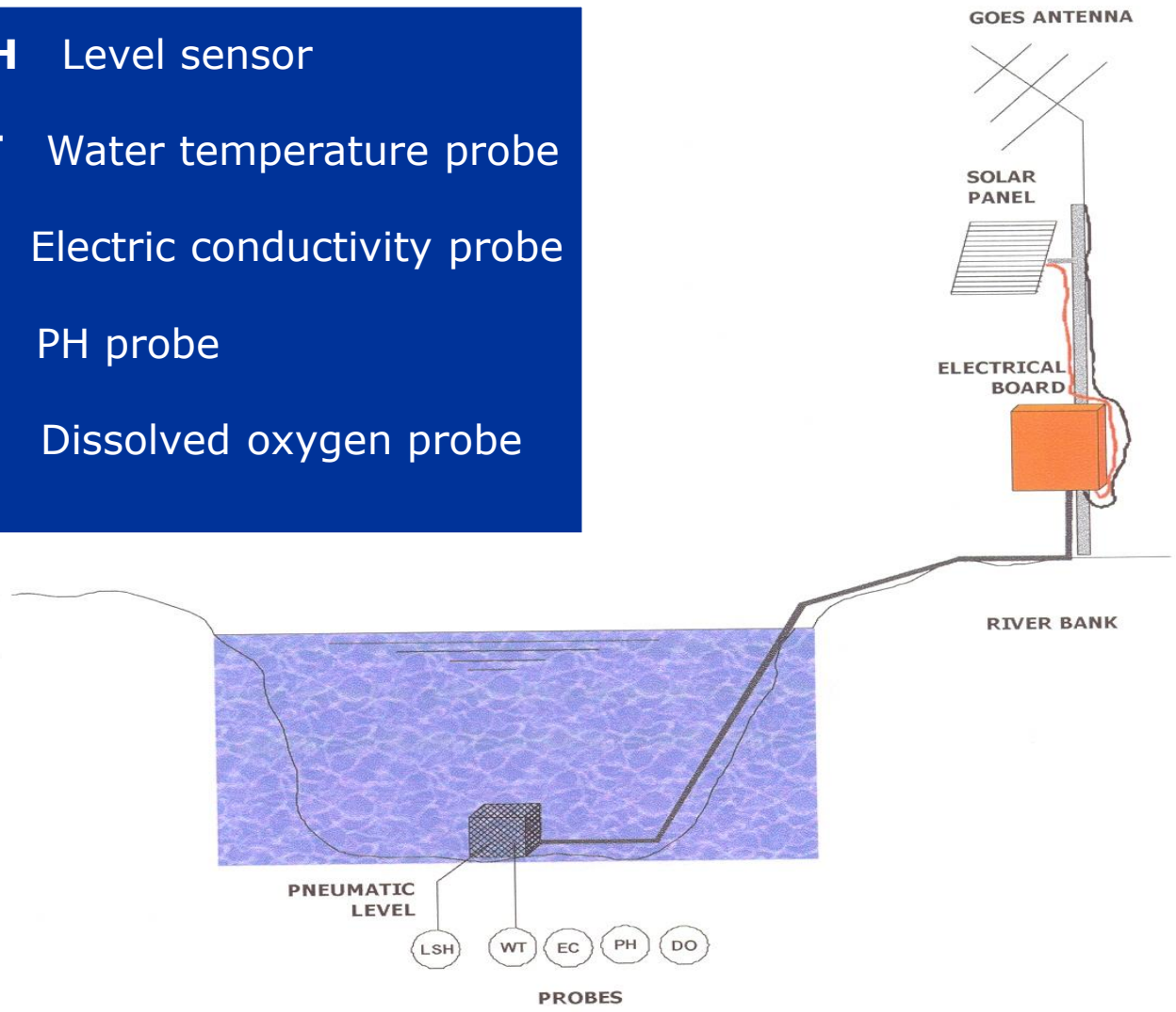
LSH Level sensor

WT Water temperature probe

EC Electric conductivity probe

PH PH probe

DO Dissolved oxygen probe



المحطة المركزية

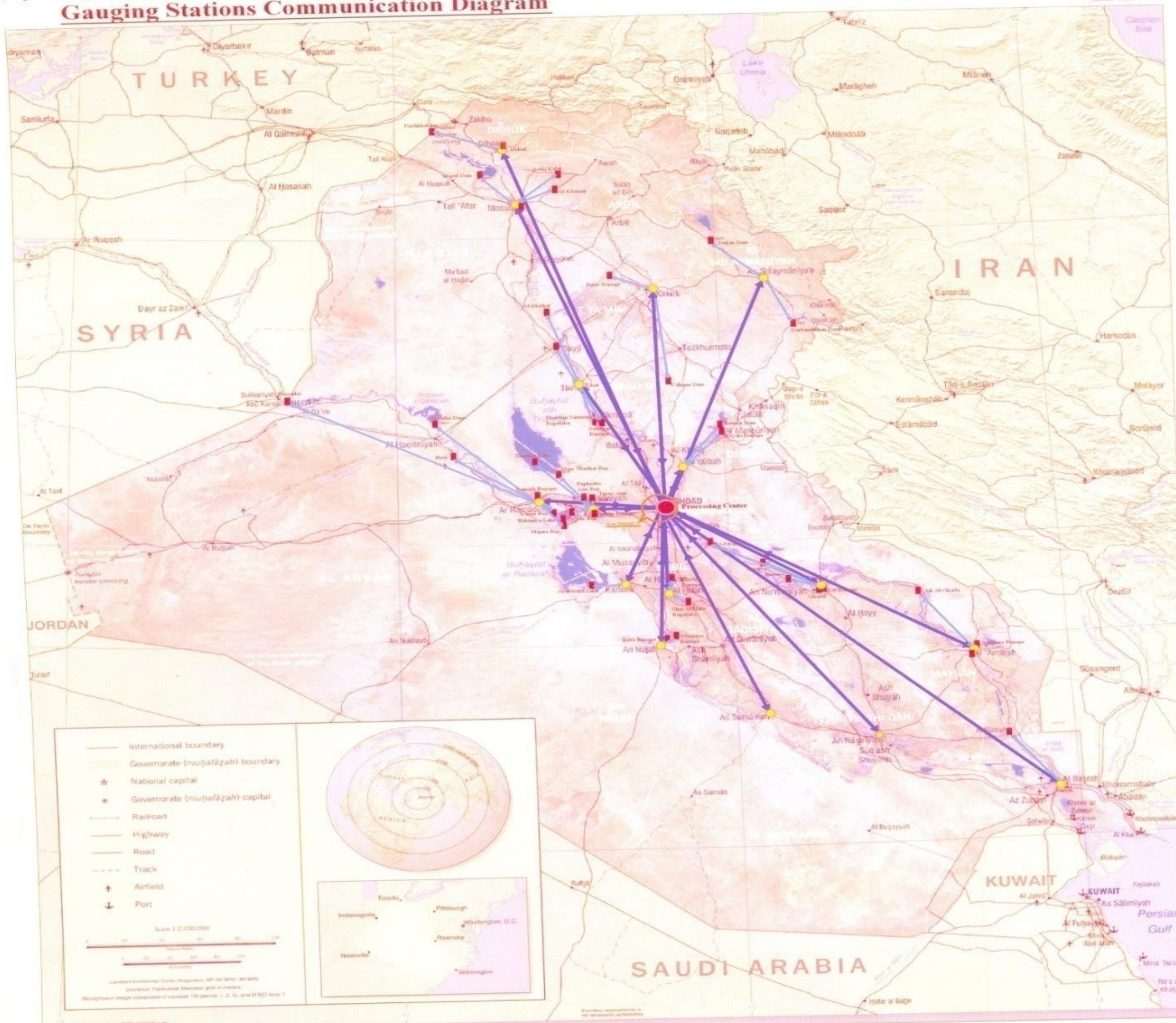
Master Station

MINISTRY OF WATER RESOURCES

General Directorate of Water Resources Management

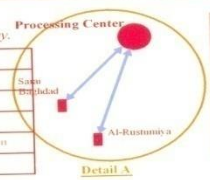
(Hydrological Studies Center) HySC

Gauging Stations Communication Diagram



NOTE: *All communication paths are TWO way.*

Symbol	Meaning
● (red)	Processing Center
● (yellow)	Local Data Station
■ (red)	Gauging Station
⟷ (purple)	Two-Ways Local Data Transmission
⟷ (light blue)	Two-Ways Regional Data Transmission

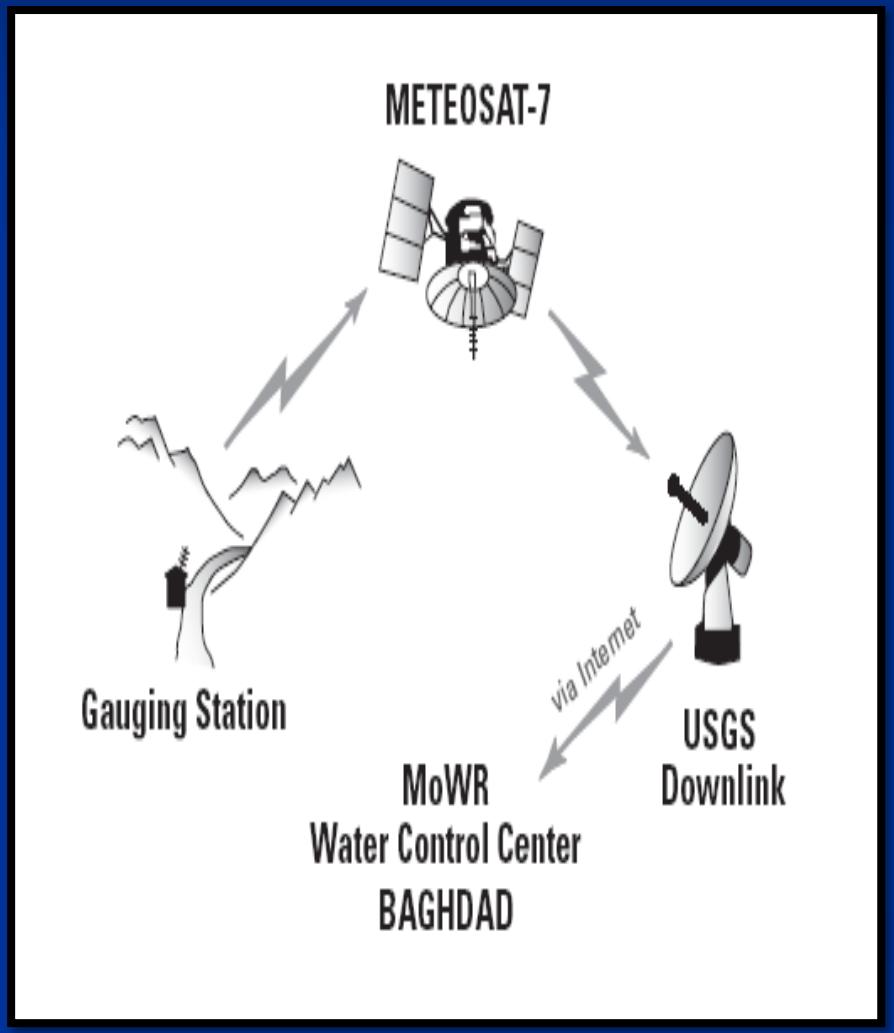


Detail A

Location	● Processing Center	● Local Data Station		■ Gauging Station			
	Processing Center (Baghdad)	Dohuk	Karbala'	Feishkhabour	Tharthar-Sammara Reg	Ammarah Barrage	Euphrates Arm Reg
		Mosul	Al-Hilla	Dohuk Dam	Sammara Barrage	Al-Qurnah	Tigris Arm Reg
		Kirkuk	Al-Najaf	Mosul Dam	Hemrin Dam	Hussaiba	Ar-Razaza Lake
		As-Sulaimaniyah	As-Samawah	Asski Kalak	Diyala Barrage	Haditha Dam	Hindiyah Barrage
		Tikrit	Al-Nasiriyah	Al-Khazeer	Sarai Baghdad	Heet	Shat Al-Hilla Reg
		Ba'quba		Dukan Dam	Al-Rustumiya	Majara Reg	Kufa Barrage
		Al-Kut		Darbendikhan Dam	As-Swarra	Warrar Reg	Abbasiyah Barrage
		Al-Amarah		Dibbis Barrage	Al-Aziziyah	Habaniyah Lake	
		Al-Basrah		Udhaim Dam	Al-Nu'maniyah	Theban Reg	
		Ramadi Barrage		Al-Sherkat	Gharaf	Thrathar Lake	
		Falluja Barrage		Bayji	Ali Al-Gharbi	Main Tharthar Reg	

Not to Scale

Data transmitting before master station is working



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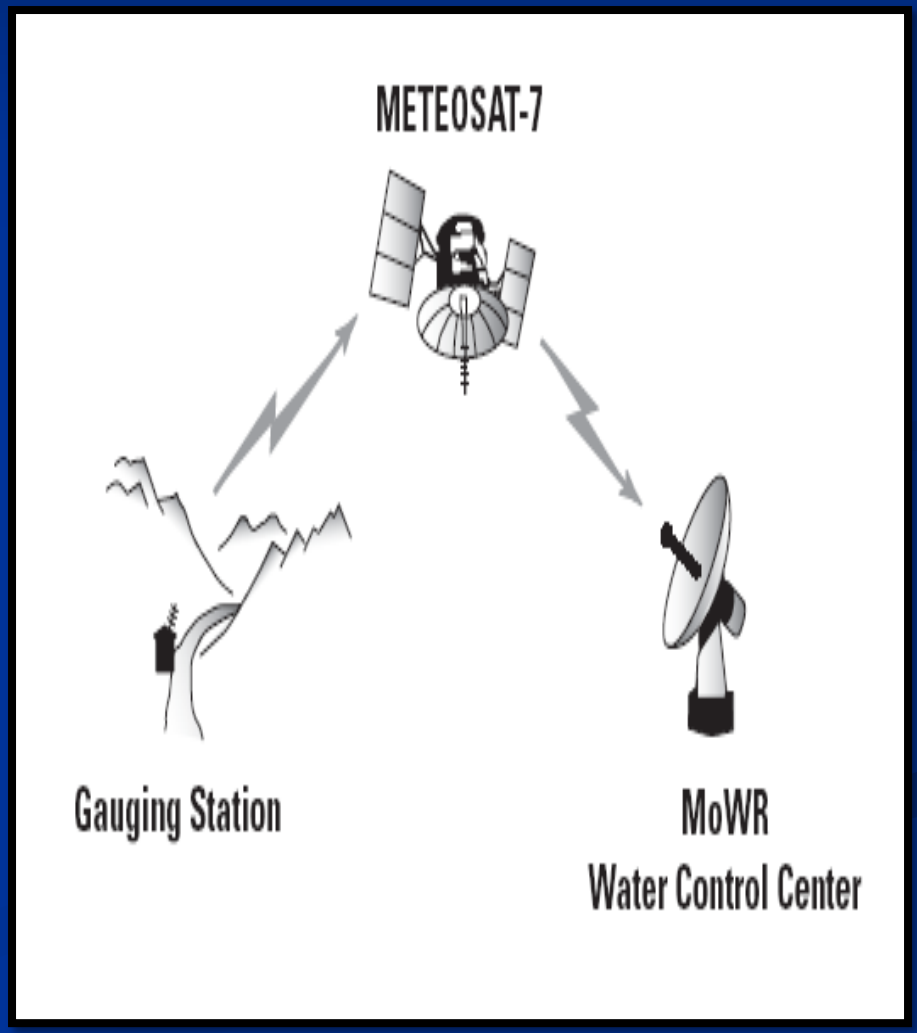
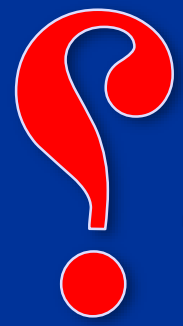


الأسئلة والمناقشة

Questions and Discussion



Thank you